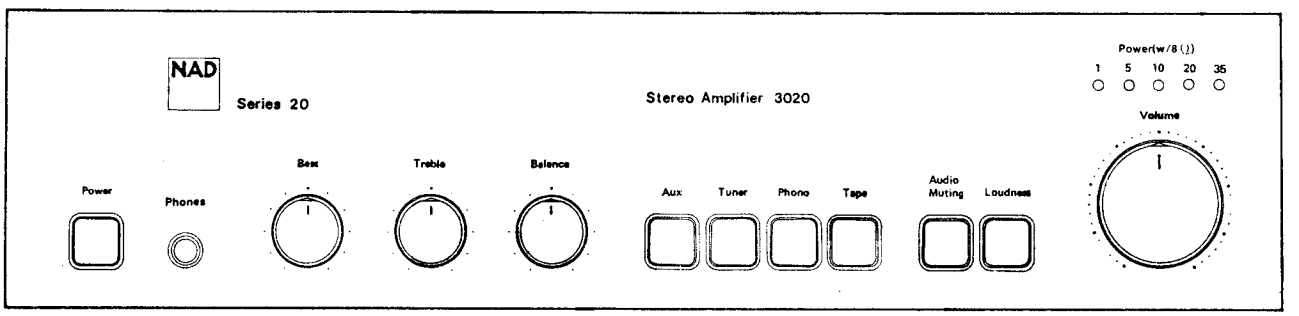
SERVICE MANUAL
NAD MODEL 3020
STEREO AMPLIFIER

STARTING AT SERIAL NO : A3205011



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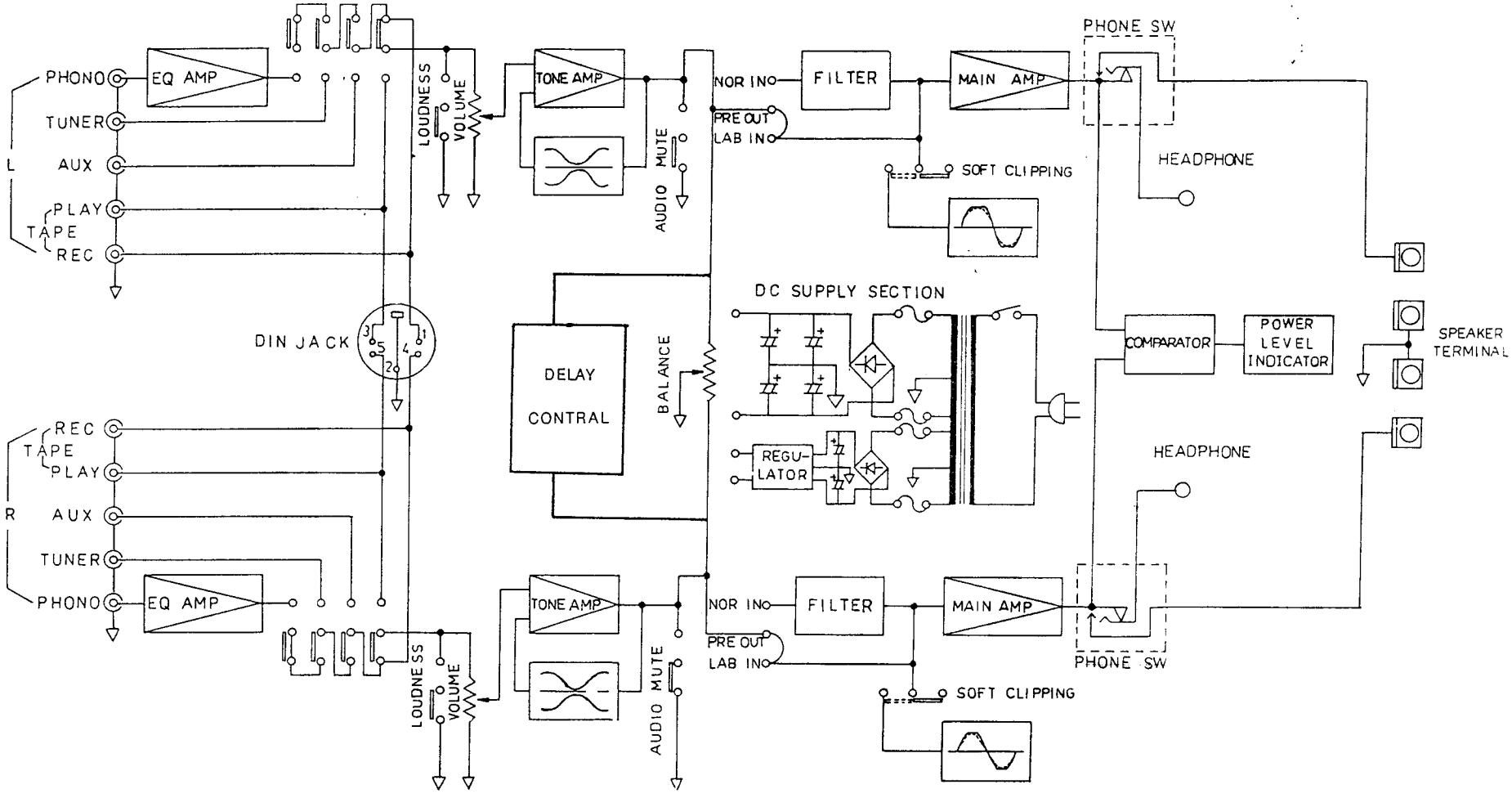
SPECIFICATION

3020 * measurements identified by an asterisk are taken in accordance with the new IHF A-202 amplifier measurement standard.

Power Amplifier Section	
* Continuous average power output at 8 ohm 20-20K Hz both	> 20W
channel driven Rated distortion.	< 0.02%
* Clipping headroom at 8 ohm	+1.5dB
Clipping power at 8 ohm /4 ohm /2 ohm	28W/37W/42W
Dynamic headroom at 8 ohm	+2.9dB
Dynamic power at 8 ohm /4 ohm /2 ohm	39W/58W/72W
* Reactive load rating	+1.7dB
* Transient Overload Recovery Time	< 1uSec
* Slew Factor	> 50
Slew Rate	15V/usec
Damping factor at 50 Hz (Ref. 8 ohm)	> 55
T.H.D 20-20K Hz From 250mV to 20W	< 0.02%
S.M.P.T.E I.M.D(60Hz + 7K Hz, 4:1) From 250mW to 20W	< 0.02%
I.H.F I.M.D (19K Hz + 20K Hz) at 20W	< 0.02%
T.I.M (15K Hz Sine + 3.18K Hz Square Wave) at 20W	< 0.02%
Frequency Response, 20—20K Hz (From Lab. IN)	± 0.5 dB
Frequency Response Range± 3 dB	10—70K Hz
Preamplifier Section	
* Input Impedance Resistance/Capacitance	47K Ω/47pF
Input Sensitivity (1K Hz) * For 1 Watt out/20 Watt out	0.5mV/2.5mV
Input Overload at 20Hz/1K Hz/20K Hz	27mV/270mV/2V
T.H.D (20—20K Hz) and IMD at + 30 dBinput level	< 0.02 %
RIAA Response Accuracy	± 0.3 dB
Signal to Noise Ratio A Weighted	
(a) With phono cartridge connected Ref 10mV/*Ref 5mV	80 dB/75 dB
(b) With short-circuit input Ref 10mV	84 dB
High Level Input	
* Input impedance Resistance/Capacitance	20K Ω/100pF
Input Sensitivity * For 1 Watt out/For 20 Watt out	30mV/150mV
Signal to Noise Ratio, A—Weighted * Ref 1 Watt out	> 80 dB
Ref 20 Watt out	> 110 dB
* Maximum input signal	Infinite
Frequency Response, 20—20K Hz	± 0.5 dB
Controls	
Bass control range at 50 Hz	± 10 dB
Treble control range at 10K Hz	± 7 dB
Infrasonic filter Turn Over frequency (From Normal IN)	15 Hz
Slope (dB/octave)	12
Power Consumption	150 VA
Weight	5.26 Kg
Dimension Height x Width x Depth (mm)	96x420x240

BLOCK DIAGRAM



3020

ALIGNMENT PROCEDURE & INSIDE VIEW

IDLE CURRENT ALIGNMENT

1. 5 Minutes minimum pre-heating is necessary.
2. Set the volume control at minimum position.
3. Connect DC milli-voltmeter across R654 for right channel and across R653 for left channel. The meter sensitivity should be set for 30–100mV full scale deflection.
4. RX2 (right channel) and RX1 (left channel). insert 560 ohm carbon resistor to connect in parallel with R646 (right channel) and R645 (left channel).
5. After insert 560 ohm. if the reading of meter were between 30 mV and 60 mV then the alignment is completed.
6. If the reading were less than 30mV then the value of RX1 or RX2 should be reduced till the reading is between 30mV and 60mV.
7. If the reading were more than 60mV. then the value of RX1 or RX2 should be increase till the reading is between 30mV and 60mV.

DC OFF-SET ALIGNMENT

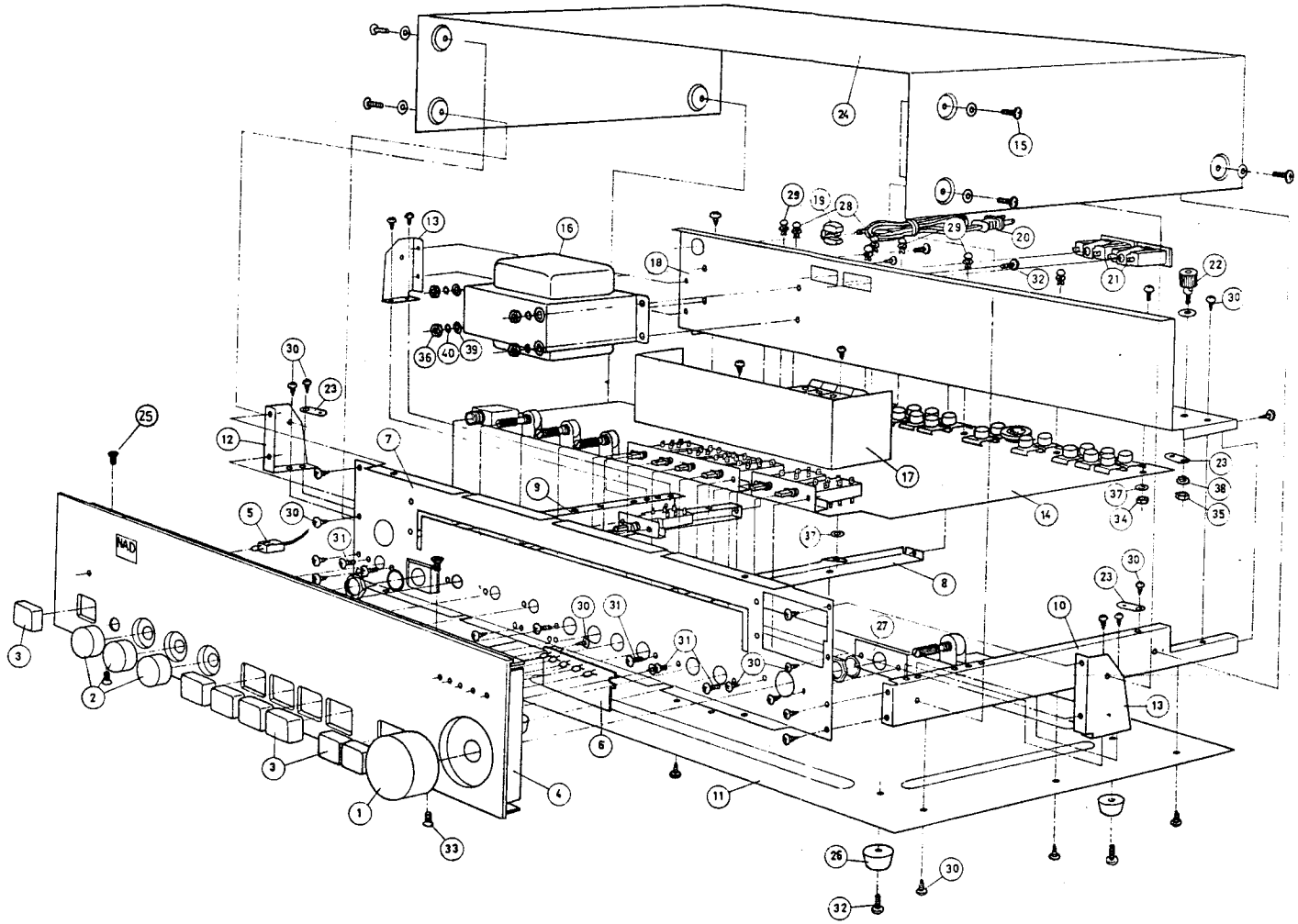
1. 5 Minutes minimum pre heating is necessary.
2. Set volume control at minimum position.
3. Connect a DC milli-voltmeter to the speaker terminals of each channel. The meter sensitivity should be set for 100-300mV full scale deflection. The positive input of the meter should be connected to the red (+) speaker terminal.
4. Adjust VR5 (for left channel) and VR6 (for right channel) till the meter reading is zero.

INSIDE VIEW

1 I/P & TAPE IN. OUT JACK
2 PHONO AMP
3 TONE AMP
4 POWER LED DRIVER
5 LOUDNESS & MUTE
6 FUNCTION SW
7 DELAY CKT
8 TONE NETWORK
9 POWER AMP
10 PHONE JACK
11 PRE OUT. MAIN IN
12 SOFTING CLIPPING SW
13 SPEAKER TML
14 POWER X'FORMER
15 GND SCREW
16 REGULATOR

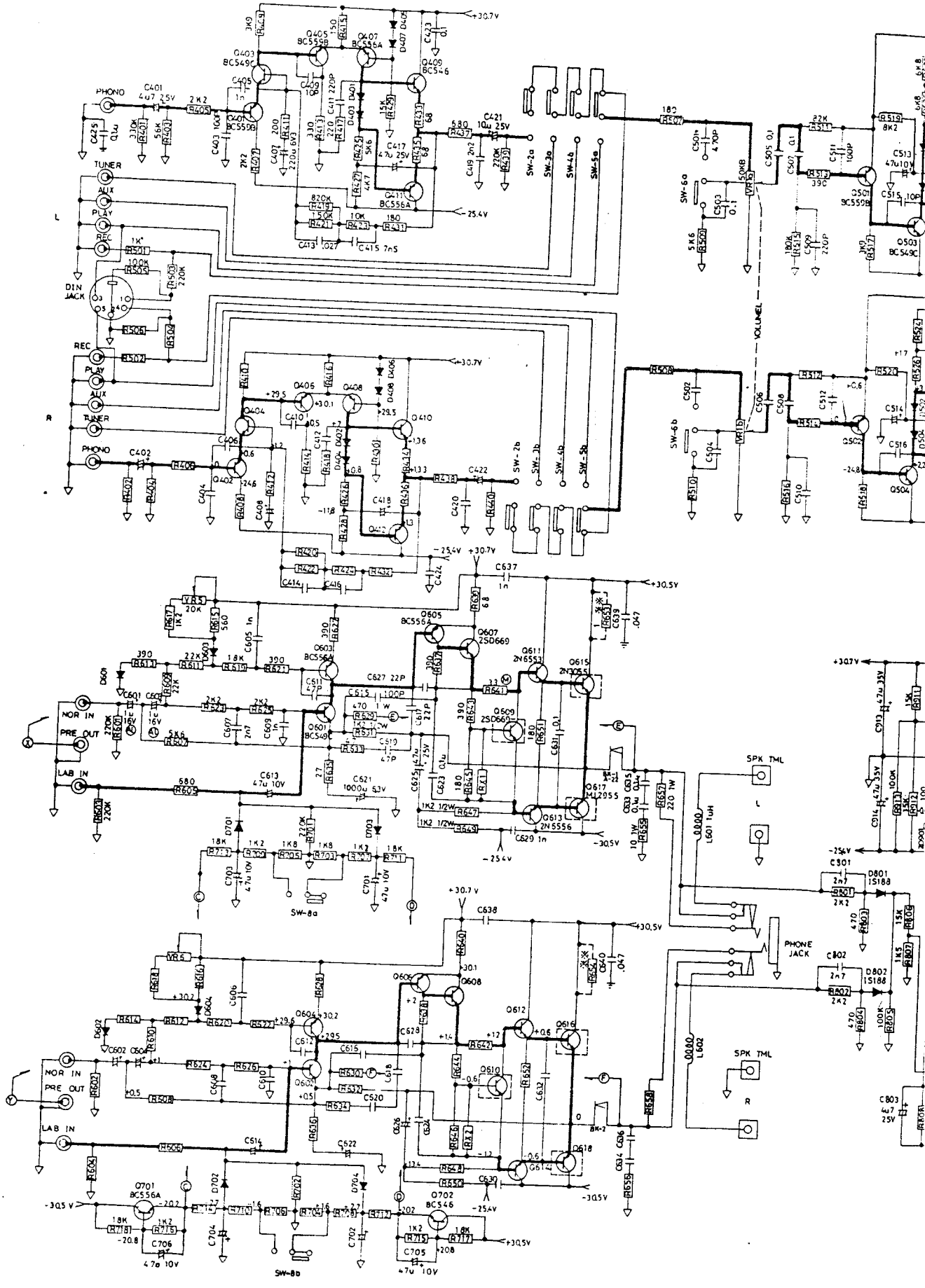
(SEE RIGHT FIG)

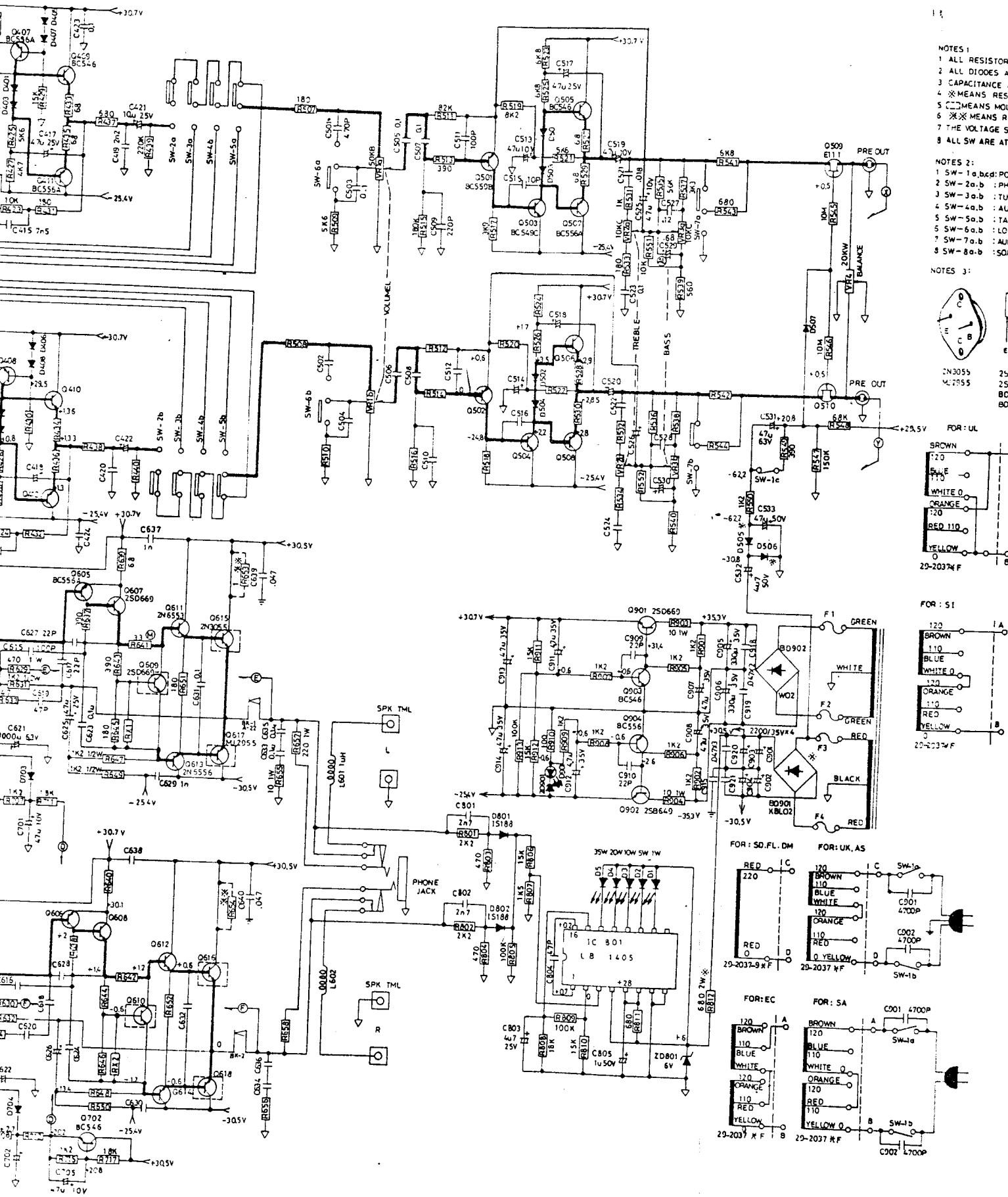
ASSEMBLY DIAGRAM



Item	Number	Name	Qty
1	12-3036	Volume Knob	1
2	12-3038	Control Knob	3
3	12-3039	Push Knob	7
4	11-8066	Front Panel	1
5	14-4003	Wire Assembly	1
6	19-1095	L.E.D. Driver	1
7	11-6046	Front Chassis	1
8	11-6044	Center Chassis	1
9	11-6040	Auxiliary Chassis (left)	1
10	11-6039	Auxiliary Chassis (right)	1
11	11-6089	Bottom Chassis	1
12	11-2113	Bracket (left)	1
13	11-2112	Bracket (right)	1
14	90-1095	P.C.B. Assembly	1
15	15-2051	Special Screw	6
16	29-2037	Power Transformer	1
17	11-5037	Heat Sink	1
18	11-8072	Back Panel	1
19	14-5005	Cord Bushing	1
20	14-5013	Power Cord	1
21	12-2006	A.C. Outlet	2
22	15-2037	Ground Screw	1
23	11-3026	Lug (Ground)	3
24	50-1015	Cabinet	1
25	S5BG3+10BSL-2	Triangle Screw 3*6	2
26	28-1029	Rubber Feet	4
27	11-2123	Bracket for Volume	1
28	15-2048	Plastic Screw 3*5.5	2
29	15-2047	Plastic Screw 3*4.5	5
30	S5BG3+08SL-2	Triangle Screw 3*8	34
31	S1B03+06SL-2	Machine Screw 3*6	7
32	S1B04+10SL-2	Machine Screw 4*10	8
33	S1E03+08SZ-2	Flate Machine Screw 3*8	0
34	N03B55102SZ	Nut 3*5.5*2	1
35	N3SB06128SZ	Nut 3.5*6*2.8	1
36	N04B07132SZ	Nut 4*7*3	4
37	A03A08F0.5	Fiber Washer 3*8*0.5	3
38	A3S107SZ01	Gear Washer 3.5*7*1	1
39	A04A10SL01	Washer 4*10*1	4
40	A04G07SL01	Spring Washer 4*7*1	4

CIRCUIT DIAGRAM




NOTES 1
1 ALL RESISTOR
2 ALL DIODES A
3 CAPACITANCE
4 ※MEANS RES
5 □MEANS MO
6 ※※MEANS R
7 THE VOLTAGE S
8 ALL SW ARE AT
NOTES 2:
1 SW-1a,b,c,d: PO
2 SW-2a,b : PH
3 SW-3a,b : TU
4 SW-4a,b : AU
5 SW-5a,b : TA
6 SW-6a,b : LO
7 SW-7a,b : AU
8 SW-8a,b : SO
NOTES 3:
2N3055
MJ2955
VOLUME
TREBLE
BASS
BALANCE
PRE OUT
SPK TML
PHONE JACK
IC 801
LB 1405
FOR : UL
FOR : SI
FOR : SD.FL.DM
FOR: UK, AS
FOR: EC
FOR : SA
BROWN
BLUE
WHITE
ORANGE
RED
YELLOW
GREEN
BLACK

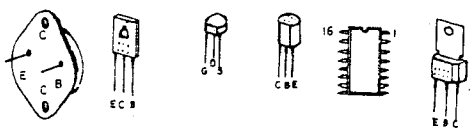
NOTES 1
1 ALL RESISTORS ARE 1/4W ±5% CARBON UNLESS OTHERWISE SPECIFIED.
2 ALL DIODES ARE BAW62 UNLESS OTHERWISE SPECIFIED.
3 CAPACITANCE ARE IN uF UNLESS OTHERWISE SPECIFIED.
4 ※MEANS RESISTOR WITH CERAMIC TUBE STAND UP ON THE P.C.B.
5 □□MEANS MOUNT ON COMMON HEAT SINK.
6 ※※ MEANS R653 R654 WILL BE SHORTED AFTER IDLE CURRENT ALIGNMENT.
7 THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATIC CONDITION.
8 ALL SW ARE AT 'OFF' POSITION.

NOTES 2:
1 SW-1a,b&d: POWER SW.
2 SW-2a,b : PHONO SW.
3 SW-3a,b : TUNER SW.
4 SW-4a,b : AUX SW.
5 SW-5a,b : TAPE MONITOR SW.
6 SW-6a,b : LOUDNESS SW.
7 SW-7a,b : AUDIO MUTE SW.
8 SW-8a,b : SOFT CLIPPING.

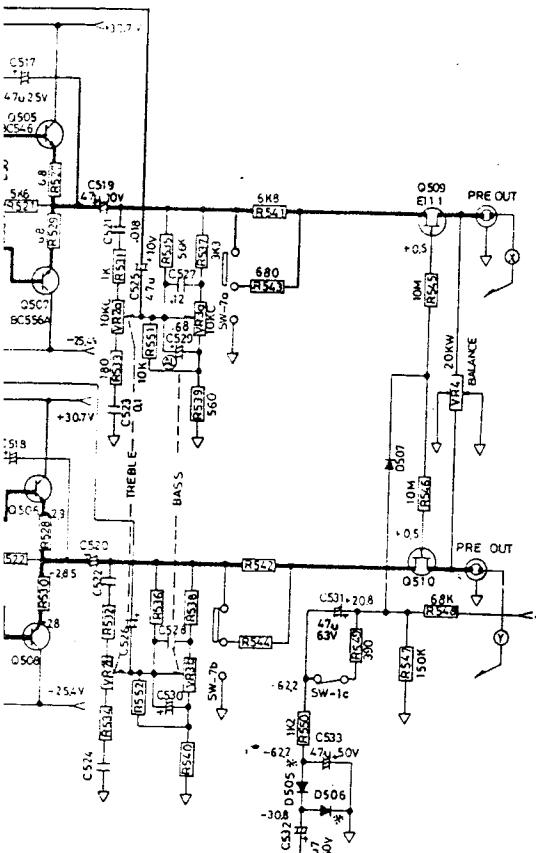
NOTE 4: FUSES RATING

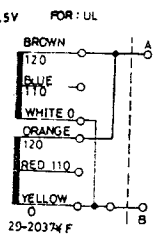
FOR:	UL, CA	SD,FL,DM
	SI, HK.	UK,AS,IL
		EC,SA.
F1, F2:		T1A/250V
F3, F4:		T3.15A/250V

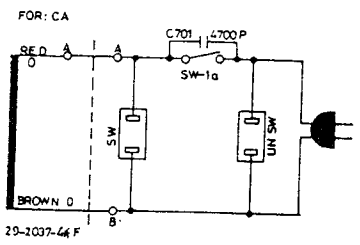
NOTES 3:

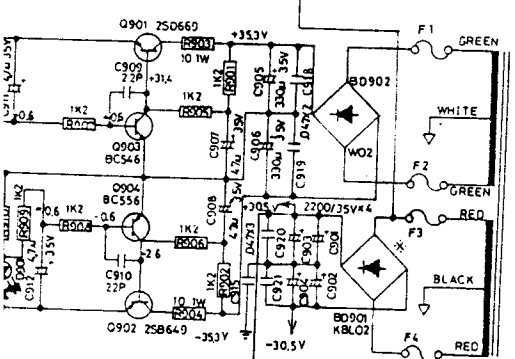


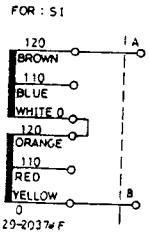
2N3055 MJ2955 | 2SB669 2SD649 BD139 BD140 | E111 | BC546 BC549 BC556 BC559 | LB1405 | 2N6553 2N6556

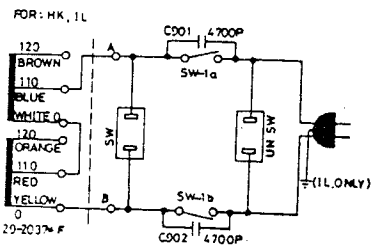


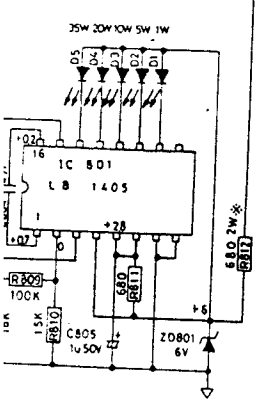


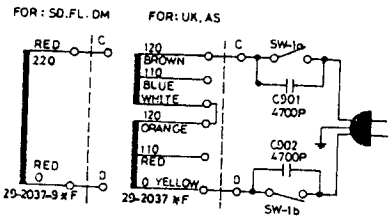


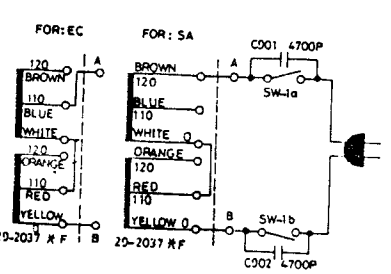


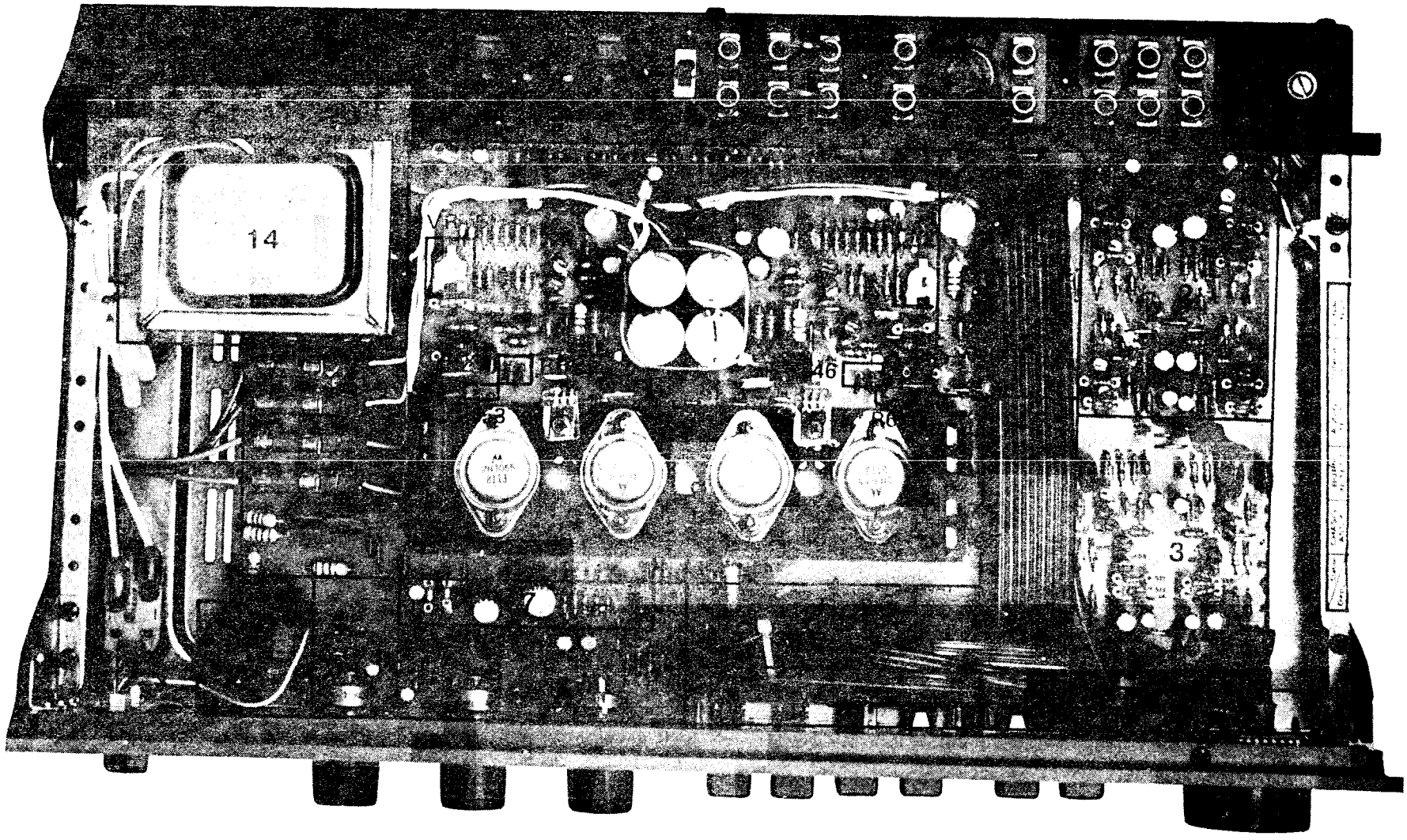








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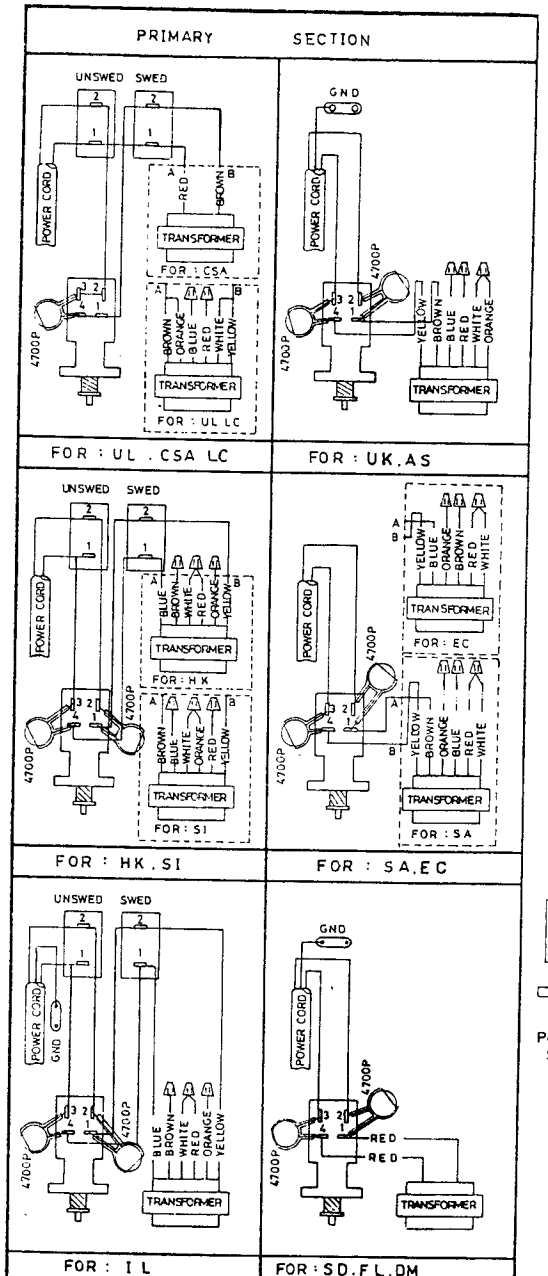
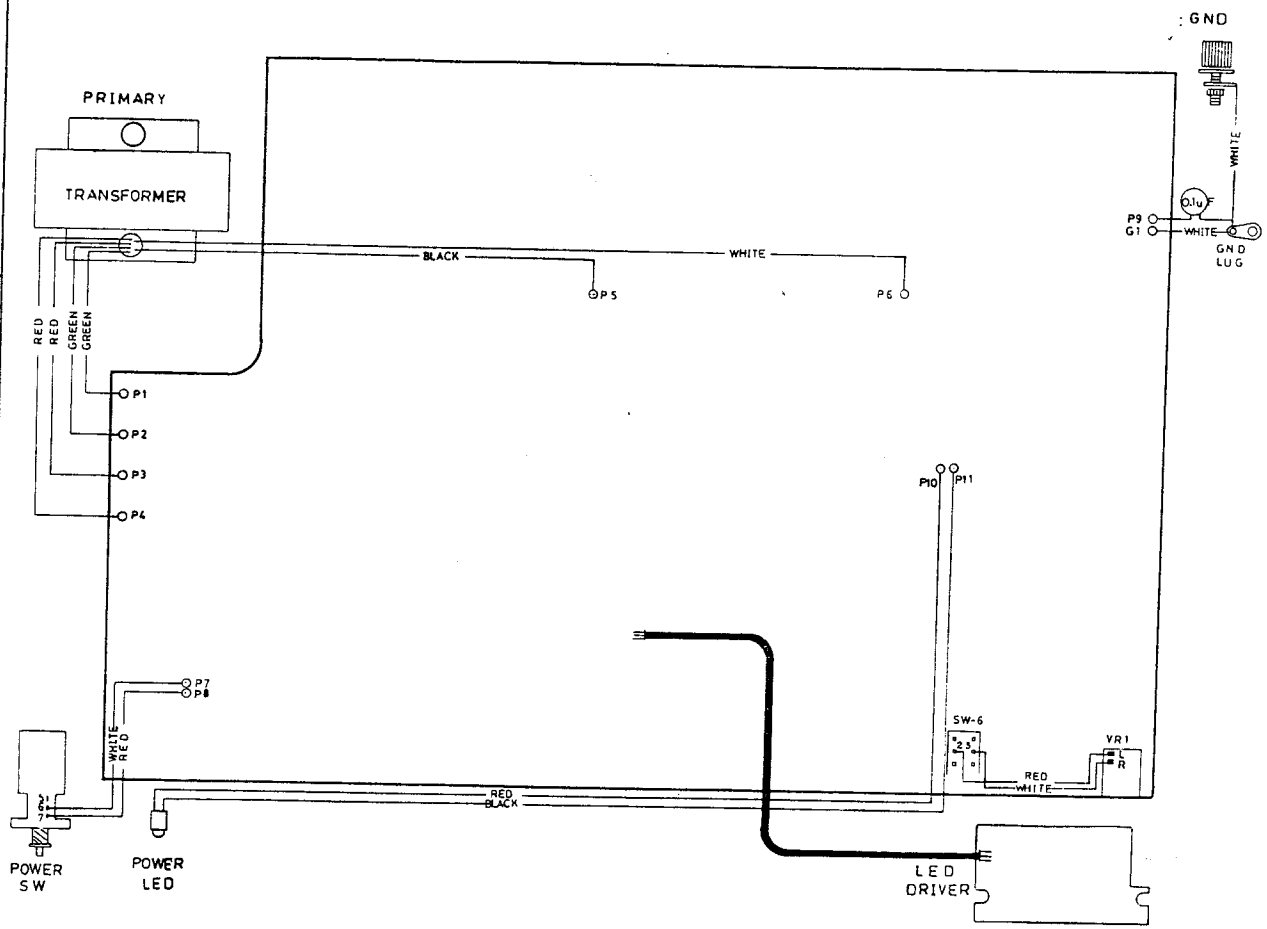
3

WIRING DIAGRAM





PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION	REF
R401, R402	16–¼CR334J	Carbon res 330K ± 5%¼W	1.70
R403, R404	16–¼CR563J	Carbon res 56K ± 5%¼W	1.70
R405, R406	16–¼CA222J	Carbon res 2K2 ± 5%¼W	1.70
R407, R408	16–¼CA222J	Carbon res 2K2 ± 5%¼W	1.70
R409, R410	16–¼CA392J	Carbon res 3K9 ± 5%¼W	1.70
R411, R412	16–¼CA201J	Carbon res 200 ± 5%¼W	1.70
R413, R414	16–¼MA331J	Metal Film res 330 ± 5%¼W	2.40
R415, R416	16–¼MA151J	Metal Film res 150 ± 5%¼W	2.40
R417, R418	16–¼CA221J	Carbon res 220 ± 5%¼W	1.70
R419, R420	16–¼CA824J	Carbon res 820K ± 5%¼W	1.70
R421, R422	16–¼CA154J	Carbon res 150K ± 5%¼W	1.70
R423, R424	16–¼CA103J	Carbon res 10K ± 5%¼W	1.70
R425, R426	16–¼CA562J	Carbon res 5K6 ± 5%¼W	1.70
R427, R428	16–¼CA472J	Carbon res 4K7 ± 5%¼W	1.70
R429, R430	16–¼CA153J	Carbon res 15K ± 5%¼W	1.70
R431, R432	16–¼CA181J	Carbon res 180 ± 5%¼W	1.70
R433, R434	16–¼MA680J	Metal Film res 68 ± 5%¼W	2.40
R435, R436	16–¼MA680J	Metal Film res 68 ± 5%¼W	2.40
R437, R438	16–¼CA681J	Carbon res 680 ± 5%¼W	1.70
R439, R440	16–¼CA224J	Carbon res 220K ± 5%¼W	1.70
R501, R502	16–¼CR102J	Carbon res 1K ± 5%¼W	1.70
R503, R504	16–¼CR224J	Carbon res 220K ± 5%¼W	1.70
R505, R506	16–¼CR104J	Carbon res 100K ± 5%¼W	1.70
R507, R508	16–¼CA181J	Carbon res 180 ± 5%¼W	1.70
R509, R510	16–¼CA562J	Carbon res 5K6 ± 5%¼W	1.70
R511, R512	16–¼CA823J	Carbon res 82K ± 5%¼W	1.70
R513, R514	16–¼CA391J	Carbon res 390 ± 5%¼W	1.70
R515, R516	16–¼CA184J	Carbon res 180K ± 5%¼W	1.70
R517, R518	16–¼CA392J	Carbon res 3K9 ± 5%¼W	1.70
R519, R520	16–¼CA822J	Carbon res 8K2 ± 5%¼W	1.70
R521, R522	16–¼CA562J	Carbon res 5K6 ± 5%¼W	1.70
R523, R524	16–¼CA682J	Carbon res 6K8 ± 5%¼W	1.70
R525, R526	16–¼CA682J	Carbon res 6K8 ± 5%¼W	1.70
R527, R528	16–¼MA680J	Metal Film res 68 ± 5%¼W	2.40
R529, R530	16–¼MA680J	Metal Film res 68 ± 5%¼W	2.40
R531, R532	16–¼CA102J	Carbon res 1K ± 5%¼W	1.70
R533, R534	16–¼CA181J	Carbon res 180 ± 5%¼W	1.70
R535, R536	16–¼CA563J	Carbon res 56K ± 5%¼W	1.70
R537, R538	16–¼CA332J	Carbon res 3K3 ± 5%¼W	1.70
R539, R540	16–¼CA561J	Carbon res 560 ± 5%¼W	1.70
R541, R542	16–¼CA682J	Carbon res 6K8 ± 5%¼W	1.70
R543, R544	16–¼CA681J	Carbon res 680 ± 5%¼W	1.70
R545, R546	16–¼CA106J	Carbon res 10M ± 5%¼W	1.70
R547	16–¼CA154J	Carbon res 150K ± 5%¼W	1.70
R548	16–¼CA683J	Carbon res 68K ± 5%¼W	1.70
R549	16–¼CA391J	Carbon res 390 ± 5%¼W	1.70
R550	16–¼CA122J	Carbon res 1K2 ± 5%¼W	1.70
R551, R552	16–¼CR103J	Carbon res 10K ± 5%¼W	1.70
R601, R602	16–¼CA224J	Carbon res 220K ± 5%¼W	1.70
R603, R604	16–¼CA224J	Carbon res 220K ± 5%¼W	1.70

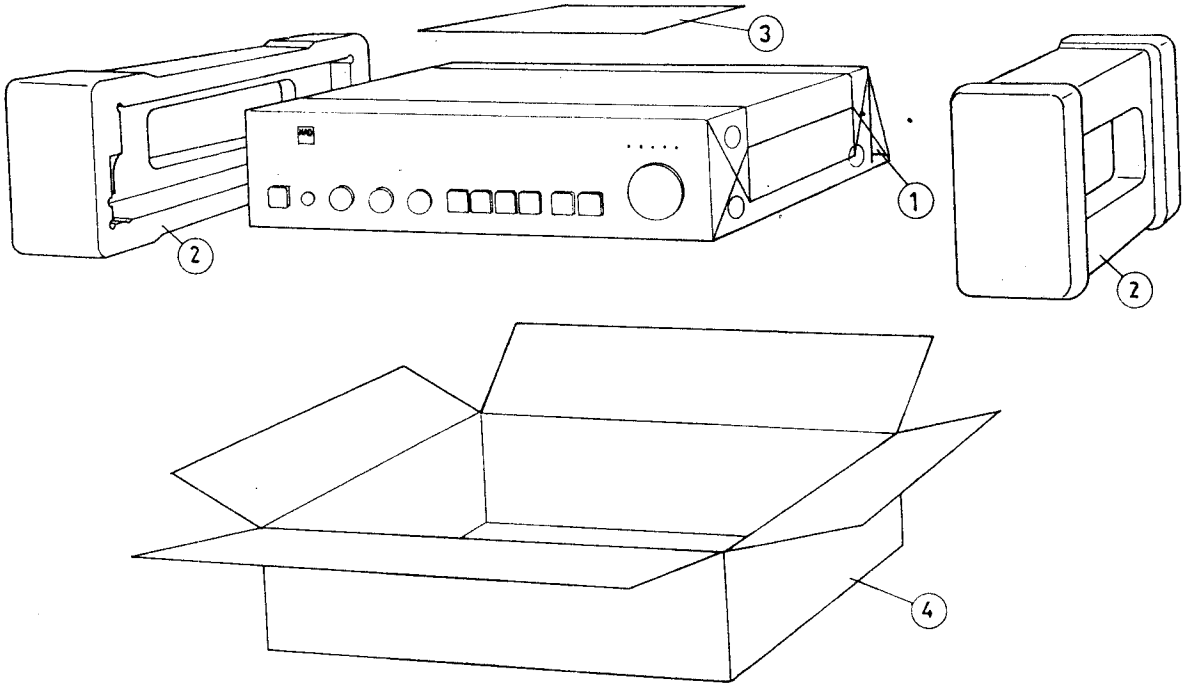
SYMBOL NO.	PART NO.	DESCRIPTION	REF
R605, R606	16–¼CA681J	Carbon res 680 ± 5% ¼W	1.70
R607, R608	16–¼CA562J	Carbon res 5K6 ± 5% ¼W	1.70
R609, R610	16–¼CA223J	Carbon res 22K ± 5% ¼W	1.70
R611, R612	16–¼CA223J	Carbon res 22K ± 5% ¼W	1.70
R613, R614	16–¼CA391J	Carbon res 390 ± 5% ¼W	1.70
R615, R616	16–¼CA561J	Carbon res 560 ± 5% ¼W	1.70
R617, R618	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R619, R620	16–¼CA183J	Carbon res 18K ± 5% ¼W	1.70
R621, R622	16–¼CA391J	Carbon res 390 ± 5% ¼W	1.70
R623, R624	16–¼CA222J	Carbon res 2K2 ± 5% ¼W	1.70
R625, R626	16–¼CA222J	Carbon res 2K2 ± 5% ¼W	1.70
R627, R628	16–¼CA391J	Carbon res 390 ± 5% ¼W	1.70
R629, R630	16– 1A471J	Metal Film res 470 ± 5% 1W	7.50
R631, R632	16–½CA122J	Carbon res 1K2 ± 5% ½W	7.00
R633, R634	16–¼CA470J	Carbon res 47 ± 5% ¼W	1.70
R635, R636	16–¼CA270J	Carbon res 27 ± 5% ¼W	1.70
R637, R638	16–¼CA391J	Carbon res 390 ± 5% ¼W	1.70
R639, R640	16–¼MA680J	Metal Film res 68 ± 5% ¼W	2.40
R641, R642	16–¼MA330J	Metal Film res 33 ± 5% ¼W	2.40
R643, R644	16–¼CA391J	Carbon res 390 ± 5% ¼W	1.70
R645, R646	16–¼CA181J	Carbon res 180 ± 5% ¼W	1.70
R647, R648	16–½CA122J	Carbon res 1K2 ± 5% ½W	7.00
R649, R650	16–½CA122J	Carbon res 1K2 ± 5% ½W	7.00
R651, R652	16–¼MA181J	Metal Film res 180 ± 5% ¼W	2.40
R653, R654	16–¼CR 1R0J	Carbon res 1 ± 5% ¼W	1.70
R655, R656	16– 1A100J	Metal Film res 10 ± 5% 1W	7.50
R657, R658	16– 1A221J	Metal Film res 220 ± 5% 1W	7.50
R701, R702	16–¼CA224J	Carbon res 220K ± 5% ¼W	1.70
R703, R704	16–¼CA182J	Carbon res 1K8 ± 5% ¼W	1.70
R705, R706	16–¼CA182J	Carbon res 1K8 ± 5% ¼W	1.70
R707, R708	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R707, R710	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R711, R712	16–¼CA183J	Carbon res 18K ± 5% ¼W	1.70
R713, R714	16–¼CA183J	Carbon res 18K ± 5% ¼W	1.70
R715, R716	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R717, R718	16–¼CA182J	Carbon res 1K8 ± 5% ¼W	1.70
R801, R802	16–¼CA222J	Carbon res 2K2 ± 5% ¼W	1.70
R803, R804	16–¼CA471J	Carbon res 470 ± 5% ¼W	1.70
R805	16–¼CA104J	Carbon res 100K ± 5% ¼W	1.70
R806	16–¼CA153J	Carbon res 15K ± 5% ¼W	1.70
R807	16–¼CA152J	Carbon res 1K5 ± 5% ¼W	1.70
R808	16–¼CA183J	Carbon res 18K ± 5% ¼W	1.70
R809	16–¼CA104J	Carbon res 100K ± 5% ¼W	1.70
R810	16–¼CA153J	Carbon res 15K ± 5% ¼W	1.70
R811	16–¼CA681J	Carbon res 680 ± 5% ¼W	1.70
R812	16– 2A681J	Metal Film res 680 ± 5% 2W	9.00
R901, R902	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R903, R904	16– 1A100J	Metal Film res 10 ± 5% 1W	7.50
R905, R906	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70
R907, R908	16–¼CA122J	Carbon res 1K2 ± 5% ¼W	1.70

SYMBOL NO.	PART NO.	DESCRIPTION	REF
R909	16–¼CA122J	Carbon res 1K2 ± 5%¼W	1.70
R910	16–¼CA101J	Carbon res 100 ± 5%¼W	1.70
R911, R912	16–¼CA153J	Carbon res 15K ± 5%¼W	1.70
R913	16–¼CA104J	Carbon res 100K ± 5%¼W	1.70
C401, C402	17–2.5ER475Y	CAPA ELEC 4.7UF/25V+15–10%	8.00
C403, C404	17–5DR101MSL	CAPA CER 100PF50V ± 20%SL	3.50
C405, C406	17–5FR102J	CAPA MY 1000PF 50V ±5%	6.50
C407, C408	17–0.63ER227Y	CAPA ELEC 220UF 6.3V +50–10%	14.00
C409, C410	17–5DR100DSL	CAPA CER 10PF 50V ±0.2PSL	3.50
C411, C412	17–5DR221M	CAPA CER 220PF 50V ±20%	4.00
C413, C414	17–5FR273J	CAPA MY 0.027UF 50V ± 5%	8.90
C415, C416	17–5FR752J	CAPA MY 7500PF 50V ± 5%	6.50
C417, C418	17–2.5ER476Y	CAPA ELEC 47UF 25V +50–10%	14.00
C421, C422	17–5FR222J	CAPA MY 2200PF 50V ± 5%	6.50
C423, C424	17–5D104M	CAPA CER 0.1UF 50V ±20%	10.00
C425,	17–5D104M	CAPA CER 0.1UF 50V ±20%	10.00
C501, C502	17–5DR471KSL	CAPA CER 470PF 50V ±10%	4.00
C503, C504	17–5F104J	CAPA MY 0.1UF 50V ±5%	13.00
C505, C506	17–5F104J	CAPA MY 0.1UF 50V ±5%	13.00
C507, C508	17–5F104J	CAPA MY 0.1UF 50V ±5%	13.00
C509, C510	17–5DR221M	CAPA CER 220PF 50V ±20%	4.00
C511, C512	17–5DR101MSL	CAPA CER 100PF 50V ±20%SL	3.50
C513, C514	17–1ER476Y	CAPA ELEC 47UF10V ±50–10%	9.00
C515, C516	17–5DR100DSL	CAPA CER 10PF 50V ±0.2PFSL	3.50
C517, C518	17–2.5ER476Y	CAPA ELEC 47UF 25V +50–10%	14.00
C519, C520	17–1ER476Y	CAPA ELEC 47UF10V +50–10%	9.00
C521, C522	17–5FR183J	CAPA MY 0.018 F50V ±5%	8.90
C523, C524	17–5F104J	CAPA MY 0.1UF 50V ±5%	13.00
C525, C526	17–1ER476Y	CAPA ELEC 47UF 10V +50–10%	9.00
C527, C528	17–5F124J	CAPA MY 0.12UF 50V ±5%	13.00
C529, C530	17–2.5R684K	CAPA AL 0.68 UF 25V ±10%	25.00
C531	17–6.3E476Y	CAPA ELEC 47 UF 63V +50–10%	25.00
C532	17–5E475Y	CAPA ELEC 4.7UF 50V +75–10%	8.00
C533.	17–5E476Y	CAPA ELEC 47 UF 50V +50–10%	18.80
C601, C602	17–2.5R105K	CAPA AL 1UF 25V ±10%	25.00
C603, C604	17–2.5R105K	CAPA AL 1UF 25V ±10%	25.00
C605, C606	17–5FR102J	CAPA MY 1000PF 50V ±5%	6.50
C607, C608	17–5FR272J	CAPA MY 2700PF 50V ±5%	6.50
C609, C610	17–5FR102J	CAPA MY 1000PF 50V ±5%	6.50
C611, C612	17–5DR470MSL	CAPA CER 47PF 50V ±20%SL	3.50
C613, C614	17–1ER476Y	CAPA ELEC 47UF 10V +50–10%	9.00
C615, C616	17–5DR101MSL	CAPA CER 100PF 50V ±20%SL	3.50
C617, C618	17–5DR220MSL	CAPA CER 22PF 50V ±20%SL	3.50
C619, C620	17–5DR470MSL	CAPA CER 47PF 50V ±20%SL	3.50
C621, C622	17–0.63ER108Y	CAPA ELEC 1000 UF 6.3V+50–10%	32.50
C623, C624	17–5F 104J	CAPA MY 0 1UF 50V ±5%	13.00
C625, C626	17–2.5ER476Y	CAPA ELEC 47 UF 25V +50–10%	14.00
C627, C628	17–5DR220MSL	CAPA CER 22PF 50V ±20%SL	3.50
C629, C630	17–5FR102J	CAPA MY 1000PF 50V ±5%	6.50
C631, C632	17–5F 104J	CAPA MY 0.1UF 50V ±5%	13.00

SYMBOL NO.	PART NO.	DESCRIPTION	REF
C633, C634	17–5D104M	CAPA CER 0.1 UF 50V ±20%	10.00
C635, C636	17–5D104M	CAPA CER 0.1 UF 50V ±20%	10.00
C637, C638	17–5FR102J	CAPA MY 1000PF 50V ±5%	6.50
C639, C640	17–5DR473Z	CAPA CER 0.047UF 50V+80–20%	5.00
C641, C642	17–5DR472Z	CAPA CER 4700PF 50V +80–20%	4.00
C701, C702	17–1ER476Y	CAPA ELEC 47UF 10V +50–10%	9.00
C703, C704	17–1ER476Y	CAPA ELEC 47 UF 10V +50–10%	9.00
C705, C706	17–1ER476Y	CAPA ELEC 47 UF 10V +50–10%	9.00
C801, C802	17–5FR272J	CAPA MY 2700PF 50V ±5%	6.50
C803	17–2.5ER475Y	CAPA ELEC 4.7UF25V +75–10%	8.00
C804	17–5DR470MSL	CAPA CER 47PF 50V ±20%SL	3.50
C805	17–5E105Y	CAPA ELEC 1UF 50V +50–10%	8.00
C901, C902	17–3.5E 228Y	CAPA ELEC 2200 UF 35V +50–10%	120.00
C903, C904	17–3.5E228Y	CAPA ELEC 2200 UF 35V+ 50–10%	120.00
C905, C906	17–3.5E337Y	CAPA ELEC 330 UF 35V+ 50–10%	33.50
C907, C908	17–3.5ER476Y	CAPA ELEC 47 UF 35V+ 50–10%	14.00
C909, C910	17–5DR220MSL	CAPA CER 22PF 50V ± 20%SL	3.50
C911, C912	17–3.5ER475Y	CAPA ELEC 4.7UF35V+ 75–10%	8.00
C913, C914	17–3.5ER476Y	CAPA ELEC 4 7 UF 35V+ 50–10%	14.00
C915	17–5DR473Z	CAPA CER 0.047 UF 50V+80–20%	5.00
C918, C919	17–5DR473Z	CAPA CER 0.047 UF 50V+80–20%	5.00
C920, C921	17–5DR473Z	CAPA CER 0.047 UF 50V+80–20%	5.00
Q401, Q402	30–2085–2	Transistor BC559B	22.80
Q403, Q404	30–2084–3	Transistor BC549C	22.80
Q405, Q406	30–2085–2	Transistor BC559B	22.80
Q407, Q408	30–2096	Transistor BC556A	24.70
Q409, Q410	30–2090	Transistor BC546	24.70
Q411, Q412	30–2096	Transistor BC556A	24.70
Q501, Q502	30–2085–2	Transistor BC559B	22.80
Q503, Q504	30–2084–3	Transistor BC549C	22.80
Q505, Q506	30–2090	Transistor BC546	24.70
Q507, Q508	30–2096	Transistor BC556A	24.70
Q509, Q510	30–2265	FET J111	57.00
Q601, Q602	30–2084–3	Transistor BC549C	22.80
Q603, Q604	30–2096	Transistor BC556A	24.70
Q605, Q606	30–2096	Transistor BC556A	24.70
Q607, Q608	30–2260	Transistor 2SD669	74.10
Q609, Q610	30–2260	Transistor 2SD669	74.10
Q611, Q612	30–2260	Transistor 2SD669	74.10
Q613, Q614	30–2259	Transistor 2SB649	74.10
Q615, Q616	30–2004	Transistor 2N3055	152.00
Q617, Q618	30–2114	Transistor MT2955	152.00
Q701	30–2096	Transistor BC556A	24.70
Q702	30–2090	Transistor BC546	24.70
Q901	30–2260	Transistor 2SD669	74.10
Q902	30–2259	Transistor 2SB649	74.10
Q903	30–2090	Transistor BC546	24.70
Q904	30–2096	Transistor BC 556A	24.70
D401, D402	30–1019	Diode BAW62	11.00
D403, D404	30–1019	Diode BAW62	11.00

SYMBOL NO.	PART NO.	DESCRIPTION	REF
D405, D406	30–1019	Diode BAW62	11.00
D407, D408	30–1019	Diode BAW62	11.00
D501, D502	30–1019	Diode BAW62	11.00
D503, D504	30–1019	Diode BAW62	11.00
D601, D602	30–1019	Diode BAW62	11.00
D603, D604	30–1019	Diode BAW62	11.00
D701, D702	30–1019	Diode BAW62	11.00
D703, D704	30–1019	Diode BAW62	11.00
D801, D802	30–1010–1	Diode IS188	10.40
D1–D5	30–1105	LED LT211CRD	22.00
BD901	30–1049	Diode KBL02	102.60
BD902	30–1040	Diode W02	88.00
D901	30–1105	LED LTZ11CRD	22.00
ZD901	30–1016	Zener Diode 23V 0.5W	20.00
VR1	29–4097F	Volume 50KBx2	200.00
VR2, VR3	29–4075F	Treble 10KC	180.00
VR4	29–4076F	Balance	180.00
VR5, VR6	29–4023–1F	Smeifixed RES 20K	18.00
IC801	30–3038	LB1405	190.00
L601, L602	29–1040	Inductor 1 H	25.00
TB1, TB2	35–3011	Breaker A–22	88.00

PACKING DIAGRAM



Item	Number	Name
1	26-0002	Poly Paper
2	34-1033	Polylone
3		Accesory Ports
4	CT-5100	Inner Carton Parts

P.C.B. PARTS LOCATION